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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/810,457
Filing Date: March 26, 2004
Appellant(s): KRISHNAN ET AL.

Himanshu S. Amin
Registration No. 40,984
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed on 12 August 2008 appealing from the Office action mailed 08 April 2008.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

7,184,767	Gandolfo	11-27-2002
2006/0046658	Cruz et al	09-05-2003
6,072,990	Agrawal et al	05-08-1997

| 2003/0083015 | Palin et al | 10-26-2001 |
| 5,920,817 | Umeda et al | 05-19-1995 |

Sun et al, Interference-Aware MAC scheduling and SAR policies for Bluetooth scatternet, IEEE, XP-010635904 (see IDS)

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

A.   Claims 1, 2, 4-6, 8, 11-16, 18-20, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo (US 7,184,767) in view of Cruz et al (US 2006/0046658).

B.   Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo in view of Cruz and further in view of Agrawal et al (US 6,072,990).

C.   Claims 7 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo in view of Cruz and further in view of Palin et al (US 2003/0083015).

D.   Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo in view of Cruz and further in view of Umeda et al (US 5,920,817).

E.   Claims 10 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo in view of Sun et al (Interference-aware MAC scheduling and SAR policies for blue tooth scatternets).

Claim Rejections - 35 USC § 103

Claims 1, 2, 4-6, 8, 11-16, 18-20, 22, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo (US 7,184,767) in view of Cruz et al (US 2006/0046658). Hereinafter referred to as Cruz.

Regarding claims 1, 11, 13, 25 and 27. Gandolfo discloses a method of

scheduling communications. The method comprises scheduling an inter-piconet

transmission between first transmitting and receiving terminals (fig.6C, the

communication between A-2 and B-2) and scheduling an intra-piconet transmission

between second transmitting and receiving terminals (fig.3, the devices, within piconet,

communicate with each other. 321 and 325).

Gandolfo discloses all the limitations of the claimed invention with the exception

of scheduling the power level for the inter-piconet and intra-piconet transmission that

will satisfy the quality parameters of the receiving terminals. Gandolfo also does not

disclose that the intra-piconet transmission is scheduled simultaneously with the inter-

piconet transmission.

However, Cruz discloses a method of scheduling the power level that will satisfy

every receiver within the network. Cruz's network is divided into multiple clusters in

communication with each other (paragraph [0017]). Moreover, Cruz discloses that the

clusters are enabled to transmit simultaneously (paragraph [0099], clusters are

interpreted as piconets). Thus, it would have been obvious to a person of ordinary skill

in the art at the time of the invention to implement the method of scheduling the power

level of the transmission and to enabling clusters simultaneously, as taught by Cruz,

into the piconet structure of Gandolfo for the purpose of improving the quality of

communication between devices and the energy efficiency, as suggested by Cruz.

Regarding claim 2. The method of Gandolfo further comprises transmitting the

schedule for the inter-piconet transmission to the first transmitting terminal (fig.6C,

510a, 530, and 522a), and transmitting the schedule for the intra-piconet transmission

to the second transmitting terminal (fig.3. 310, 321, and 330).

Regarding claims 4 and 18. Gandolfo discloses a method wherein the first

transmitting terminal and the second transmitting and receiving terminals are members

of a first piconet (fig.6C, 521a, 523a, and 522a, col.8, lines 15-16, the element of the

piconets behave just as illustrated in fig.3), and the first receiving terminal is a member

of a second piconet (fig.6C, 522b).

Regarding claims 5 and 19. Gandolfo discloses a method wherein the first

transmitting terminal and the second transmitting and receiving terminals are members

of a first piconet (fig.6C, the first transmitting element 510a, second transmitting element

523a, and the second receiving element 521a. col.8, lines 15-16, the element of the

piconets behave just as illustrated in fig.3), and the first receiving terminal is a member

of the first piconet and a second piconet (fig 6C, 522a is a member of the first and

second piconet col.8, lines 15-16, the elements of the piconets behave just as illustrated

in fig.3).

Regarding claims 6 and 20. Gandolfo discloses a method wherein the inter-

piconet transmission comprises information (fig.6C), the information being destined for a

third terminal (522b), the third terminal being a member of the second piconet (560b),

but not a member of the first piconet (fig.6C), the method further comprising scheduling

a transmission of the information from the first receiving terminal to the third terminal

(information is transmitted from 510a to 522b through 522a).

Regarding claims 8, 12, 22 and 26. Gandolfo discloses a wherein the first transmitting terminal and the second transmitting and receiving terminals are members of a first piconet (fig.6C elements 522a, 521a, 523a), and the first receiving terminal is a member of a second piconet (505a), the method further comprising transmitting the inter-piconet transmission schedule to a third terminal in the second piconet (510b), the third terminal being responsible for scheduling intra-piconet transmissions in the second piconet (510b is the second piconet's controller).

Regarding claim 14. Gandolfo discloses a method that further comprises a transmitter configured to transmit the schedule of the inter-piconet transmission to the first transmitting terminal (each piconet has a master or a controller that organizes the communication between devices, fig.3, and 6C), and transmit the schedule of the of intra-piconet transmission to the second transmitting terminal (each piconet has a master or a controller that organizes the communication between devices, fig.3, and 6C).

Regarding claim 15. Gandolfo discloses a method that further comprises a transceiver having the transmitter (fig.3, 6C every device in the piconets is a wireless device), and a user interface configured to allow a user to engage in communications with another terminal through the transceiver (fig.3, 6C the devices are wireless devices engaged in a communication with the master or the other devices wirelessly).

Regarding claim 16. Gandolfo discloses a method wherein the user interface comprises a keypad, a display, a speaker and a microphone (col.8, lines 15-17. The

devices in the piconet correspond to the elements of Fig.3, which a PDA is one of them).

Claims 3 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo in view of Cruz as applied to claim1 above, and further in view of Agrawal et al (US 6,072,990). Hereinafter referred to as Agrawal.

Regarding claims 3 and 17. Gandolfo and Cruz do not explicitly disclose that the quality parameter comprises a carrier-to-interference ratio. However, Agrawal discloses, in a wireless network, a method that measures the quality of a transmission using various channel quality metrics such as carrier-to-interference (C/I) ratio (admitted prior art, col.1, lines 27-37). Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to implement the carrier-to-interference (C/I) ratio, as suggested by Agrawal, into the network of Gandolfo and Cruz for the purpose of improving or maintaining the quality of transmission between devices.

Claims 7 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gandolfo in view of Cruz as applied to claims 1 and 13 above, and further in view of Palin et al (US 2003/0083015). Hereinafter referred to as Palin.

Regarding claims 7 and 21. Gandolfo and Cruz do not explicitly disclose that a scheduled power level for the transmission, between terminals, is a function of path-loss related to the received information. However, Palin discloses, in a communication system, a method of scheduling and measuring the power level based on the power loss information. Thus, it would have been obvious to a person of ordinary skill in the art at the time of the invention to implement the method of assigning the power level based

on the path loss information, as taught by Palin (paragraph [0042] and [0044]), into the

communication system of Gandolfo in view of Cruz for the purpose of improving QOS

and employing transmission power efficiently.

Claims 9 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Gandolfo in view of Cruz as applied to claims 1 and 13 above, and further in view of

Umeda et al (US 5,920,817). Hereinafter referred to as Umeda.

Regarding claims 9 and 23, Gandolfo and Cruz disclose all the limitations of the

claimed invention. Gandolfo and Cruz do not explicitly disclose that the inter-piconet

transmission has a first spreading code and the intra-piconet transmission has a second

spreading code; moreover, the first spreading code is different from the second

spreading code. However, Umeda discloses, in a mobile communication system, a

method where a device is capable of communicating with n different elements using n

different spreading codes (col.7, lines 6-27). Thus, it would have been obvious to a

person of ordinary skill in the art at the time of the invention to implement the method of

having different spreading codes for different entities and networks, as suggested by

Umeda, into the networks of Gandolfo in view of Cruz for the purpose of enhancing

transmissions security.

Claims 10 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Gandolfo in view of Sun et al (Interference-aware MAC scheduling and SAR

policies for blue tooth scatternets). Hereinafter referred to as Sun.

Regarding claims 10 and 24. Gandolfo discloses a method of scheduling

communications. The method comprises receiving in a first piconet information relating

to a scheduled inter-piconet transmission from a second piconet (fig.6C.Inter-piconet

communication is established); and scheduling a plurality of intra-piconet transmissions

in the first piconet (fig.6C, each piconet has the same structure as of the piconet of

fig.3).

Gandolfo discloses all the limitations of the claimed invention with the exception

that no intra-piconet transmissions are scheduled simultaneously with the inter-piconet

transmission. However, Sun discloses a method where the inter-piconet and intra-

piconet transmissions are not simultaneous because the salve nodes take turns in

transmitting information (page 11, from left column, line 44 to right column, Line 21, and

27-29; page 13, left column, lines 28-31, and right column, lines 28-39). Thus, it would

have been obvious to a person of ordinary skill in the art at the time of the invention

implement the interference aware method of Sun into the piconet system of Gandolfo

for the purpose of avoiding or reducing interference between transmissions.


(10) Response to Argument

A.   **Regarding claims 1, 2, 4-6, 8, 11-16, 18-20, and 25-27 under 35 U.S.C.**
103(a).

Appellants have argued that Gandolfo in view of Cruz fails to, disclose, teach,

mention, or suggest *"a method for scheduling communication between first and second*

terminals in an intra piconet and scheduling communications between first and second

terminals in an intra piconet".

In response to appellants' argument, the examiner respectfully disagrees. As

indicated in previous rejections, Figure 3 in Gandolfo, shown below, teaches how intra-

piconet communication operates. Figure 3 and column 3, lines 37-47, disclose that a

piconet controller uses a beacon to assign and define time slots. All network devices

listen to the controller during the beacon period. The controller coordinates the

transmitting and receiving of the devices. Consequently, each device would know when

to transmit and when to receive. Thus, the scheduling of intra piconet between first and

second terminals is met by Gandolfo.
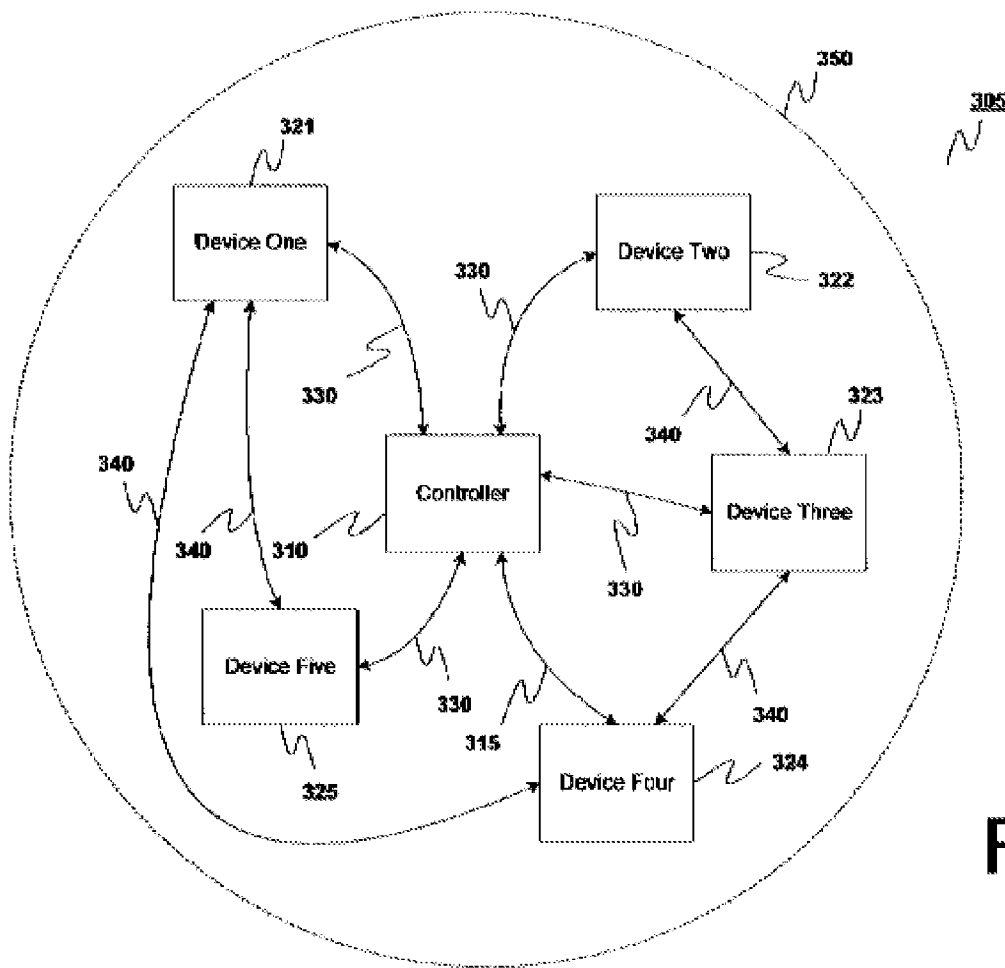
Fig. 3

Further, figure 6C and column 11, lines 41-58, show communication between

multiple piconets (inter-piconets). For instance, one of the controllers from one of the

networks is capable of enabling communication between devices through time slot

assignments, where each device is from a different piconet. As shown in figure 6C,

devices 522a and 522b communicate with each other via a wireless link 590. Thus, the

scheduling of inter piconet between first and second terminals is met by Gandolfo.
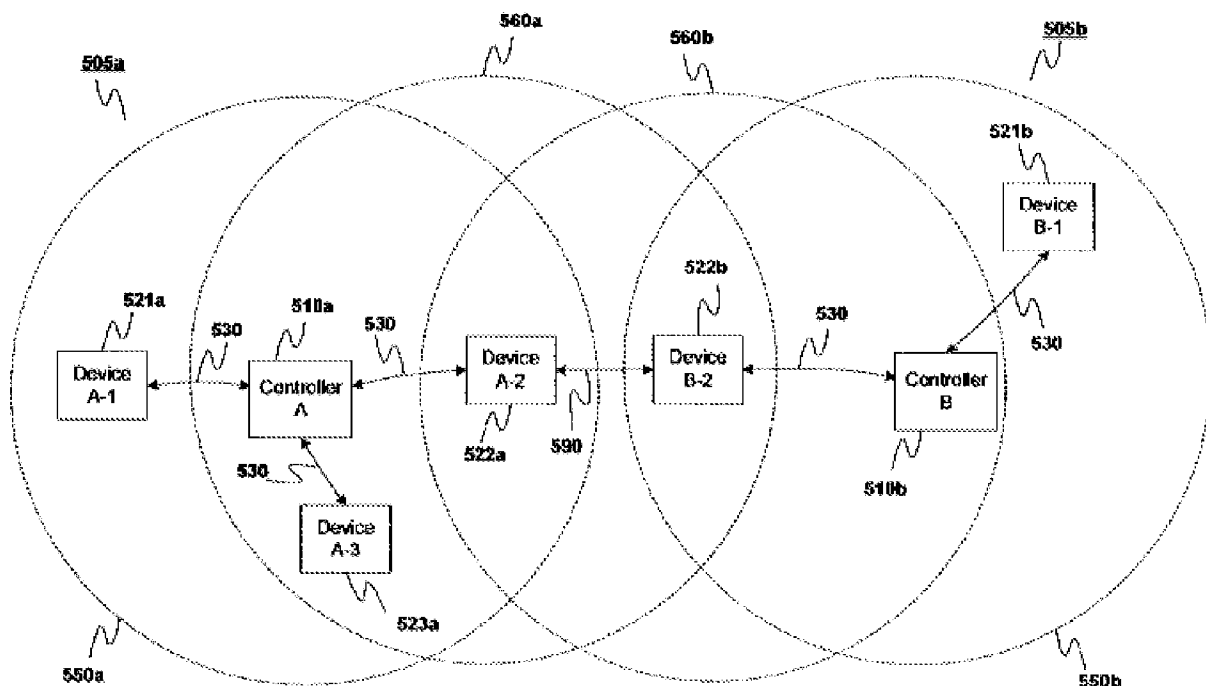

Fig. 6C

Therefore, Gandolfo discloses that a single piconet controller is capable of

scheduling time slots to enable communication between specific devices within the

same piconet or between specific devices from different piconets, as discussed above.

Appellants further alleged that the rejection to the claims listed above fails

because *"Cruz fails to teach or suggest scheduling power levels for the inter-piconet*

and intra-piconet transmission that satisfies quality parameters of receiving terminals

and further fails to teach or suggest that the intra-piconet transmission is scheduled

simultaneously with the inter-piconet transmission".

As previously discussed, Gandolfo discloses scheduling time slots to enable

communication between devices within inter-piconet and intra-piconet. Also as stated

earlier in previous office actions, Gandolfo fails to teach scheduling power level for

communication between devices. However, Cruz, from the same field of endeavor,

teaches a method of choosing optimal power levels in **each** time slot for each

transmitter (see paragraph [0040], lines 1-2), the chosen power level has to satisfy the

receiving node otherwise it will appear to the receiving node as interference (see

paragraphs [0026] and [0027]). Therefore, contrary to appellants, Gandolfo in view of

Cruz teaches scheduling power levels of each time slot to allow efficient transmission

between devices within inter-piconet and intra-piconet.

As mentioned above, Appellants state that both prior arts fails to teach

simultaneously scheduling inter-piconet and intra-piconet transmissions. However, both

Gandolfo and Cruz disclose the capability of scheduling inter-piconet and intra-piconet

transmission simultaneously. Gandolfo teaches (fig.4b) the usage of a frame of time

slots wherein each time slot enables a specific transmitter to transmit to a specific

receiver. Therefore, a single frame can enable multiple transmissions concurrently.

Similarly, Cruz teaches scheduling transmission employing time slots, wherein each

time slot is dedicated for a specific transmission between a specific transmitter and

specific receiver. Accordingly, Cruz teaches the same method of communication as

previously discussed by Gandolfo. Thus, the simultaneous inter-piconet and intra-piconet transmission is met by Gandolfo.

B.   Regarding claims 3 and 17 under 35 U.S.C. 103(a).

Appellants believe that claims 3 and 17 are allowable as being dependent on claims 1 and 13.

Examiner respectfully disagrees, claims 3 and 17 stand rejected because claims 1 and 13 remain rejected as discussed above.

C.   Regarding claims 7 and 21 under 35 U.S.C. 103(a).

Appellants believe that claims 7 and 21 are allowable as being dependent on claims 1 and 13.

Examiner respectfully disagrees, claims 9 and 21 stand rejected because claims 1 and 13 remain rejected as discussed above.

D.   Regarding claims 9 and 23 under 35 U.S.C. 103(a).

Appellants believe that claims 9 and 23 are allowable as being dependent on claims 1 and 13.

Examiner respectfully disagrees, claims 9 and 23 stand rejected because claims 1 and 13 remain rejected as discussed above.

E.   Regarding claims 10 and 24 under 35 U.S.C. 103(a).

Appellants argue that Gandolfo does not teach, mention, or disclose scheduling transmission whatsoever.

Examiner respectfully disagrees. According to the previously discussed section (A) in the response to argument, Gandolfo discloses scheduling both inter-piconet and intra-piconet transmissions.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Mounir Moutaouakil/

Examiner, Art Unit 2419

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